

Método de los Momentos

Ejemplo 2:

$$X \sim f_{\theta}(x)$$

$$f_{\theta}(x) = \theta \left(\frac{1}{x} \right)^{\theta+1}$$

$$x > 1, \quad \theta > 1$$

$$E(X) = \alpha_1 = \int_{-\infty}^{\infty} x f_{\theta}(x) dx$$

$$\alpha_1 = \int_1^{\infty} x \theta \left(\frac{1}{x} \right)^{\theta+1} dx = \int_1^{\infty} \theta \left(\frac{1}{x} \right)^{\theta} dx = \theta \frac{x^{-\theta+1}}{-\theta+1} \Big|_1^{\infty} = \frac{\theta}{\theta-1}$$

(X_1, \dots, X_n) m.a.s. de X

$$a_1 = \bar{x} = \frac{\sum x_i}{n}$$

Despejo θ

$$\theta = \frac{\alpha_1}{\alpha_1 - 1}$$

$$\hat{\theta} = \frac{\bar{x}}{\bar{x} - 1}$$